

ATTACHMENT A REMARKS

The interview held on February 2, 2006, with Examiner Herrera and Supervisory Primary Examiner Corsaro, is gratefully acknowledged. The courtesy and cooperative spirit shown during the interview is much appreciated. The interview centered around the rejection on prior art and a proposed amendment to the claims was discussed. The substance of the discussion at the interview is incorporated in the remarks which follow.

Claims 1-8 have been rejected on prior art, with claims 1-3 being rejected under 35 USC 102(a) as being unpatentable over the Maki et al reference ("Maki") in view of the Andersson et al patent ("Andersson"). Other references have been relied on in the rejection of some of the other dependent claims.

In order to expedite the prosecution, claim 1 has been amended to more clearly define over the references cited. Before considering amended claim 1, some background is believed to be helpful. As mentioned in the last response as being discussed in the introductory portion of this application, the present invention concerns cellular systems for transmitting information by radio between an infrastructure and moving bodies constrained to travel on a predetermined path. While the invention is not limited to this application, a major application thereof is in the field of transportation and, in particular, in connection with railway networks that include at least one tunnel along the network. It will be appreciated that multiple reflections are a particular problem in tunnels and like structures. However, it is to be understood that, as stated in the specification, the invention is also applicable to other fields including communications with aircraft in flight or on the ground which follow well determined paths or itineraries. Although systems are known which provide some protection against interference, the present invention is particularly concerned with increasing interference immunity.

As is also discussed in the introductory portion of this application and as set forth in the claims, a key feature of the present invention is that the transceivers of the stationary transceiver stations or "radio bases" distributed along the path of travel and allocated to successive cells, and at least one transceiver carried by a mobile, are controlled in such a manner that, while the mobile is in a given cell, exchanges between (i) the mobile and (ii) the transceivers allocated to that cell, take place on two different

frequencies in alternation during two successive radio cycles. In other words, as recited in amended claim 1, the transceivers of the stationary stations and the transceiver carried by each mobile are controlled in such a manner that, while a mobile is in a given cell, exchanges between the mobile and the transceivers allocated to the given cell take place on two different frequencies in alternation between two successive radio cycles "so that for a radio communication from the mobile to the transceivers allocated to the cell lasting a plurality of cycles, the communication takes place at a first frequency during a first radio cycle, at a second different frequency during the next radio cycle, at the first frequency during the next radio cycle, at the second frequency during the next radio cycle, and so on, depending on the number of radio cycles, in a repeating pattern alternating between said first and second frequencies."

Turning to the references, in applying the references to the claims, and, in particular, in reading on the Maki reference the recitation that "the transceivers of the stationary stations and the transceiver carried by each mobile are controlled in such a manner that, while a mobile is in a given cell, exchanges between the mobile and the transceivers allotted to the cell take place in alternation during two successive radio cycles," the Examiner has made reference to Figure 4 and to "downlinks and uplinks of one T period between the time t_0 to t_1 and then a successive downlinks and uplinks of one T period between t_1 to t_2 ." The Examiner has also conceded that the Maki reference "does not specifically disclose two different frequencies."

However, in the rejection, Andersson is relied on as making up the deficiency of the Maki patent with respect to the use of two different frequencies. In particular, the Examiner contends that Andersson "clearly shows and discloses two different frequencies" and makes particular reference to "FIG. 1b (c1) and (k1)" and to column 4, lines 66 and 67 and column 5, lines 1-4.

The lines to which the Examiner has referred relate to communication between a base station and a mobile station which "forms part of a connection set-up." The passage in question states that "[e]ach connection set-up uses two frequencies, of which one frequency is used for communication from the mobile station to the base station, the so-called uplink, while the other frequency is used for communication from the base station to the mobile station, the so-called downlink."

The Examiner has also referred to column 5, lines 29-32, in support of the contention that it "would have been obvious to a person of ordinary skill in the art at the time of the invention was made to incorporate two frequencies taught by Andersson et al. for communicating between the base station and the mobile station in a given cell taught by Maki et al. for the purpose of avoiding interference signals for better performance." It is noted that the lines of column 5 to which the Examiner has referred concern "so-called fixed frequency division in mobile television systems," and, in particular, are concerned with avoiding interference signals between different base stations by allocating well separated frequencies to neighboring cells. It is respectfully submitted that this has nothing to do with assigning different frequencies to the same cell. In other words, while the Andersson patent discloses the use of different frequencies for a mobile during movement thereof from one cell to a neighboring cell, there is no teaching in Andersson with respect to providing different, alternating frequencies within the same cell.

It is respectfully submitted that even if the Maki and Andersson patents were combined as proposed by the Examiner, and assuming for the sake of argument that the combination is a valid combination not based on hindsight, claim 1 patentably defines over the resultant hybrid combination. In this hybrid combination, as proposed by the Examiner, a first frequency would be used during a downlink transmission while a second, different frequency would be used during an uplink transmission. However, this is clearly not what is claimed in amended claim 1. As indicated above, claim 1, as amended, provides that for a radio communication from the mobile to the transceivers allocated to the given cell lasting a plurality of cycles, the communication takes place at a first frequency during a first radio cycle, at a second different frequency during the next radio cycle, at the first frequency during the next radio cycle, at the second frequency during the next radio cycle, and so on, depending on the number of radio cycles, in a repeating pattern alternating between the first and second radio cycles. It is respectfully submitted that this is simply not the same thing as using different frequencies during uplink and downlink transmissions.

In summary it is respectfully submitted that the combination proposed by the Examiner would not provide the claimed solution for the problem of interference

occurring within a single cell, i.e., would not provide for exchanges to take place, as claimed, in alternation between two successive radio cycles between at least one mobile and transceiver stations allocated to the cell located along the path of travel (e.g., in connection with a train traveling through a tunnel). In this regard, as indicated above, and as is set forth in the paragraph bridging pages 1 and 2 of the application and the first full paragraph on page 2, the cellular system of the present invention provides robust protection against external interference within a cell and such is the case even if more than one train is moving in the same cell, so that the transmission of one train can be disturbed by interference from another (see Figures 1, 2 and 7, and the related description thereof). It is respectfully submitted that the Maki and Andersson patents do not deal with the problems solved by the present invention and, again, simply do not disclose the present invention as claimed in amended claim 1, even if combined as proposed.

With respect to the dependent claims, these claims are patentable for at least the reasons set forth above in support of parent claim 1.

Applicant has made an earnest attempt to place this application in condition for allowance based on the discussion at the interview. As was mentioned during this discussion, if the Examiners still find that a problem exists in more clearly distinguishing over the cited references, the Examiners are respectfully urged to telephone the undersigned so that the problem can be overcome.

Allowance of the application in its present form is respectfully solicited.

END REMARKS